



LEXSEE 195 USPQ 430

**IN THE MATTER OF THE APPLICATION OF DONALD FRANCIS BEST,
ANTHONY PETER BOLTON and HERBERT CHARLES SHAW**

Patent Appeal No. 77-509.

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

562 F.2d 1252; 1977 CCPA LEXIS 108; 195 U.S.P.Q. (BNA) 430

October 13, 1977, Decided

PRIOR HISTORY: [1]**

Serial No. 347,216.

Processes and Process for Preparing Same." n1/ We affirm.

LexisNexis (TM) HEADNOTES - Core Concepts:

n1/ A continuation-in-part of serial No. 145,900, filed May 21, 1971.

COUNSEL:

Richard G. Miller, New York City, attorney of record, for appellants, James C. Arvantes, Arlington, Va., of counsel.

Joseph F. Nakamura, Washington, D.C., for the Commissioner of Patents, Gerald H. Bjorge, Washington, D.C., of counsel.

The Invention

The invention relates to zeolitic molecular sieve catalyst compositions useful in hydrocarbon conversion and to a process for producing them. Claim 1 is illustrative of the product claims:

OPINIONBY:

MARKEY

OPINION: [*1252]

MARKEY, Chief Judge.

Appeal from the decision of the Patent and Trademark Office (PTO) Board of Appeals (board) sustaining rejections of claims 1-7 under 35 USC 102 or 35 USC 103, and claims 3-7 under 35 USC 112, of appellants' application serial No. 347,216, filed April 2, 1973, for "Catalyst for Hydrocarbon Conversion

1. A crystalline zeolitic aluminosilicate having a $\text{SiO}_2/\text{Al}_2\text{O}_3$ [**2] molar ratio of from 4.6 to 5.4, a face centered cubic unit cell having an a_0 of greater than 24.45 to 24.55 Å, an $\text{Na}_2\text{O}/\text{Al}_2\text{O}_3$ molar ratio of not greater than 0.25, an adsorptive capacity in the dehydrated state for oxygen of at least 26 weight per cent at 100 mm Hg oxygen pressure and -183 degree C., an ion [*1253] exchange capacity of from 0.15 to 0.35 and having the essential X-ray powder diffraction pattern of zeolite Y with the proviso that the d-spacing thereof having the Miller Indices 331 is at least as great in intensity as the line thereof having the Miller Indices 533.

Claim 3 is illustrative of the process claims:

3. Process for preparing a hydrolytically stable zeolitic aluminosilicate which comprises providing an

ion-exchanged zeolite Y having the following composition in terms of mole ratios of oxides

0.75 - 0.9(A)2O: 0.1 - 0.25 Na2O: Al2O3: 4.6-5.4 SiO2: yH2O

wherein "A" represents H⁺ or NH₄⁺ or a mixture thereof, and wherein Y has a value of from zero to nine, heating the zeolite at a temperature between 550 degree C. and 800 degree C. for a period of at least 0.25 hours in an inert atmosphere comprising sufficient steam to prevent dehydroxylation of the [**3] zeolite, removing at least a major proportion of any ammonia generated by the heated zeolite from contact with the zeolite, and cooling the steamed zeolite to a temperature below 350 degree C. at a rate sufficiently rapid that the cooled zeolite exhibits an X-ray powder diffraction pattern having the d-spacing corresponding to the Miller Indices, hkl, of 331 at least as strong in intensity as that corresponding to the Miller Indices 533, prior to any post-steaming ion exchange treatment.

Claim 2 is restricted to a zeolite of claim 1 with a Na2O/Al2O3 molar ratio of less than 0.038. Claims 4-7 add further process restrictions as to starting materials or

process steps. All of the claims stand or fall with claims 1 and 3.

As recognized in the prior art, crystalline zeolitic aluminosilicates with high concentrations of sodium cations do not make good hydrocarbon conversion catalysts. For this reason PA 77-509.

sodium cations are replaced with non-metallic cations such as hydrogen or ammonium. The hydrogen or ammonium cations are removed by calcination, producing a decationized zeolite. Such decationized zeolites have poor hydrothermal stability, i.e., they lose their crystallinity [**4] upon reheating after contact with water.

The process of appealed claims 3-7 is a stabilization procedure for such low-sodium zeolites wherein a thermal treatment in the presence of steam is followed by a particular cool-down step. The zeolitic compositions of claims 1-2 represent the products of the claimed process.

The 102/103 Rejections

The references relied upon were:

Maher et al. (Maher)	3,293,192	Dec. 20, 1966
Hansford	3,354,077	Nov. 21, 1967
McDaniel et al. (McDaniel)	3,449,070	June 10, 1969
Kerr et al. (Kerr I)	3,493,519	Feb. 3, 1970
Kerr (Kerr II)	3,513,108	May 19, 1970

All claims were rejected under 35 USC 102 or 35 USC 103 as unpatentable over Hansford. Claims 1-2 were additionally rejected in view of each of Maher, McDaniel, Kerr I, and Kerr II. n2/

Hansford discloses a method for producing a hydrothermally stable Y-sieve zeolite composition by calcining an ammonium zeolite Y for 2 or more hours in an atmosphere containing water vapor at a temperature of from 700 degree F to 1200 degree F (338 degree C - 649 degree C). The starting material is disclosed by Hansford as having a SiO2/Al2O3 molar ratio of 4 to 6 and a reduced [**5] Na2O content of 0.6% to 2.5% by weight (appellants claim 0.1 - 0.25 Na2O/Al2O3 molar ratio and disclose 2.48% by weight in example 10 of their specification). In rejecting claims 1-7 on Hansford, the examiner asserted that a major portion of any ammonia generated during calcination would inherently be removed from contact with the zeolite, because the gaseous atmosphere disclosed by Hansford was in the form of a moving stream. Also with respect to Hansford, the examiner believed the cooling rate of the zeolite after

stabilization to be within the [*1254] terms of the appealed process claims. The claimed product being the unique result of the claimed process, the examiner, therefore, rejected both process and product claims as anticipated by Hansford, or, in any case, as obvious in view of Hansford.

n2/ The examiner rejected claims 1-7 under 35 USC 103 as unpatentable over Kerr I, and claims 1, 2, 3, 6, and 7 under 35 USC 103 as unpatentable over Kerr II. The board affirmed only in relation to claims 1-2 and reversed in relation to claims 3-7 over Kerr I and to claims 3, 6, and 7 over Kerr II.

[**6]

In sustaining the rejection, the board added its view of Hansford.

All the positive process limitations are expressly disclosed except for the functionally expressed rate of

cooling. However, there is nothing to indicate that this rate of cooling in any way differs from the normal rate resulting from removal of the heat source. Thus, the examiner's conclusion that those parameters of the resultant product which are recited in the appealed claims but are not expressly disclosed in the reference would be inherent is a reasonable one, absent convincing evidence to the contrary. Appellants have presented no such convincing evidence. No comparison has been made between appellants' process and product and the process and product disclosed in the Hansford patent. The comparative data contained in appellants' specification and in an affidavit under 37 CFR 1.132 do not relate to the reference but merely illustrate the result of deviating from appellants' process. Such deviations appear to be also outside the scope of the Hansford teaching.

OPINION

I. The Process Claims

The appellants urge that, because Hansford is silent on appellants' crucial cool-down step and on his apparatus, [**7] a direct comparison between the claimed process and that of Hansford is impossible. Appellants correctly state that indirect comparisons, based on established scientific principles, can validly be applied to distinguish a claimed chemical process or product from that disclosed in the prior art. *In re Blondel*, 499 F.2d 1311, 182 USPQ 294 (CCPA 1974). However, our analysis of the comparative data offered by appellants convinces us that the burden of rebutting the PTO's reasonable assertion of inherency under 35 USC 102, or of prima facie obviousness under 35 USC 103, has not been met.

Our reading of Hansford leads us to conclude, as did the board, that all process limitations of claim 3 are expressly disclosed by Hansford, except for the functionally expressed rate of cooling. Because any sample of Hansford's calcined zeolitic catalyst would necessarily be cooled to facilitate subsequent handling, the conclusion of the examiner that such cooling is encompassed by the terms of the appealed claims was reasonable.

The board did not specifically mention the absence of ammonia as a result of "removing at least a major proportion of any ammonia generated by the heated zeolite from [**8] contact with the zeolite," as recited in claim 3. Its affirmance of the examiner, however, carried with it a concurrence in the examiner's view that Hansford discloses a gaseous atmosphere in a "stream." In concluding that Hansford expressly disclosed all process limitations except the cooling rate, the board necessarily considered Hansford's disclosure of a gas "stream" as equivalent to a disclosure of the removal of

generated ammonia from contact with the zeolite. Though appellants argued before the board and before us that Hansford is silent on the matter, they have not provided any effective argument nor submitted any evidence that a gas stream does not inherently remove generated ammonia.

This court, in *In re Swinehart*, 58 CCPA 1027, 439 F.2d 210, 169 USPQ 226 (1971), set forth the burden of proof required to overcome an inherency rejection:

[It] is elementary that the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art, does not cause a claim drawn to those things to distinguish over the prior art. Additionally, where the Patent Office has reason to believe that a functional limitation asserted to be critical for [**9] establishing novelty in the claimed subject matter may, in fact, be [*1255] an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. [58 CCPA at 1031, 439 F.2d at 212-13, 169 USPQ at 229.]

This burden was involved in *In re Ludtke*, 58 CCPA 1159, 441 F.2d 660, 169 USPQ 563 (1971), and is applicable to product and process claims reasonably considered as possessing the allegedly inherent characteristics.

The proof required here relates to appellants' cool-down step. The only comparative data on the cool-down rate are found in examples 1(a) and 1(c) of appellants' specification. Those data merely establish that there may be cooling rates which are not the cooling rate functionally set forth in claim 3. Absent from the data is a comparison of X-ray diffraction patterns, the phenomenon employed in defining cooling rates. Thus the data found in the specification are insufficient to rebut the inherency rejection of the process claims.

In view of Hansford's silence on cool-down rate and on his apparatus, appellants need only [**10] have shown that the cool-down rate, for a typical laboratory-scale sample when employed in Hansford's process, would not yield a cooled zeolite with the X-ray diffraction pattern of claim 3. Appellants failed to do even that.

Appellants submitted an affidavit of Skeels, n3/ the thrust of which was the assertion that, although cooling rates can vary greatly, depending on the apparatus employed and the quantity of zeolite treated, some normal cooling rates with typical laboratory equipment are much slower than that disclosed in appellants' specification and encompassed by claim 3. The Skeels affidavit fails for lack of a showing that such normal

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cooling rates are not rapid enough to result in the particular X-ray diffraction pattern recited in appealed claim 3.

n3/ The board considered the Skeels affidavit untimely and treated it as mere argument. But if the board's statement that appellants' cooling rate did not differ from "the normal rate resulting from removal of the heat source" were considered a new ground of rejection and the affidavit be considered evidence, the data presented would not rebut the inherency rejection, absent a showing of X-ray diffraction patterns for cooled zeolites.

[**11]

We affirm the board's decision upholding the rejection of process claims 3-7 as anticipated under 35 USC 102 or as obvious under 35 USC 103, and do not reach the rejection of claims 3-7 under 35 USC 112.

II. The Product Claims

Product claims 1-2 were rejected as unpatentable over each of Hansford, Maher, McDaniel, Kerr I, and Kerr II. We find it necessary to consider only Hansford.

Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See *In re Ludtke*, *supra*. Whether the rejection is based on "inherency" under 35 USC 102, on "prima facie obviousness" under 35 USC 103, jointly or alternatively, n4/ the burden of proof is the same, and its fairness is evidenced by the

PTO's inability to manufacture products or to obtain and compare prior art products. See *In re Brown*, 59 CCPA 1036, 459 F.2d 531, 173 USPQ 685 (1972

n4/ There is nothing inconsistent in concurrent rejection for obviousness under 35 USC 103 and for anticipation by inherency under 35 USC 102. *In re Skoner*, 517 F.2d 947, 186 USPQ 80 (CCPA 1975); *In re Pearson*, 494 F.2d 1399, 181 USPQ 641 (CCPA 1974).

[**12]

In product claim 1 appellants have "fingerprinted" their crystalline zeolitic aluminosilicate by reciting six parameters, two directly compositional in nature, SiO₂/Al₂O₃ and Na₂O/Al₂O₃ molar ratios. The other parameters are the cubic unit cell size (a₀), the ion exchange capacity, the oxygen adsorption capacity, and the X-ray powder diffraction pattern. Hansford discloses SiO₂/Al₂O₃ [*1256] and Na₂O/Al₂O₃ molar ratios within the ranges recited in claim 1, but does not specifically disclose the other parameters.

Though urging that the other parameters are the unique result of their claimed process, appellants have offered no comparison of those other parameters with the corresponding parameters of Hansford's product.

We affirm the decision of the board upholding the rejections of product claims 1-2 on Hansford and do not reach the rejections of claims 1-2 on Maher, McDaniel, Kerr I, or Kerr II.

The decision of the board is affirmed.

AFFIRMED



LEXSEE 169 F3D 743

IN RE ANTHONY J. ROBERTSON and CHARLES L. SCRIPPS

98-1270

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

169 F.3d 743; 1999 U.S. App. LEXIS 3224; 49 U.S.P.Q.2D (BNA) 1949

February 25, 1999, Decided

PRIOR HISTORY: [**1] Appealed from: Patent and Trademark Office Board of Patent Appeals and Interferences. (Serial No. 08/171,484).

DISPOSITION: REVERSED.

LexisNexis (TM) HEADNOTES - Core Concepts:

COUNSEL: Kenneth R. Adamo, Jones, Day, Reavis & Pogue, of Cleveland, Ohio, argued for appellant. With him on the brief were Calvin P. Griffith, and Gregory A. Castanias, of Washington, DC. Of counsel on the brief was Steven W. Miller, The Proctor & Gamble Company, of Cincinnati, Ohio.

Linda Moncys Isacson, Associate Solicitor, Office of the Solicitor, of Arlington, Virginia, argued for appellee. With her on the brief were Albin F. Drost, Acting Solicitor, and John M. Whealan, Associate Solicitor.

JUDGES: Before NEWMAN, Circuit Judge, FRIEDMAN, Senior Circuit Judge, and RADER, Circuit Judge. Opinion for the court filed by Senior Circuit Judge FRIEDMAN, in which Circuit Judge NEWMAN joins. Concurring opinion filed by Circuit Judge RADER.

OPINIONBY: FRIEDMAN

OPINION: [**744] FRIEDMAN, Senior Circuit Judge:

This appeal challenges the decision of the Board of Patent Appeals and Interferences (Board) that claim 76 in the appellants' patent application was anticipated by and obvious over United States Patent No. 4,895,569 (the Wilson patent). We reverse.

I

Both claim 76 and [**2] Wilson involve fastening and disposal systems for diapers. In both, the body of the diaper features a small front and a larger rear section. The outer edges of those sections are attached at the wearer's waist in the hip area. Once the diaper is soiled and then removed, the smaller front section is rolled up into the larger rear section and secured in this rolled-up configuration by fasteners.

The appellants' application is for "an improved mechanical fastening system for . . . disposable absorbent articles [i.e., diapers] that provides convenient disposal of the absorbent article." Claim 76 covers:

[A] mechanical fastening system for forming side closures . . . comprising

a closure member . . . comprising a first mechanical fastening means for forming a closure, said first mechanical fastening means comprising a first fastening element;

a landing member . . . comprising a second mechanical fastening means for forming a closure with said first mechanical fastening means, said second mechanical fastening means comprising a second fastening element mechanically engageable with said first element; and

disposal means for allowing the absorbent article [**3] to be secured in a disposal configuration after use, said disposal means comprising a third mechanical fastening means for securing the

absorbent article in the disposal configuration, said third mechanical fastening means comprising a third fastening element mechanically engageable with said first fastening element . . .

Claim 76 thus provides for two mechanical fastening means to attach the diaper to the wearer and a third such means for securing the diaper for disposal.

The Wilson patent discloses two snap elements on fastening strips attached to the outer edges of the front and rear hip sections of the garment. The fastening strips may also include "secondary load-bearing closure means" - additional fasteners to secure the garment; they may be identical to the snaps.

Wilson also states:

Disposal of the soiled garment upon removal from the body is easily accomplished by folding the front panel . . . inwardly and then fastening the rear pair of mating fastener members . . . to one another, thus neatly bundling the garment into a closed compact package for disposal.

[*745] In other words, Wilson does not provide a separate fastening means to be used in disposing of the [*4] diaper. Instead, it suggests that disposal of the used diaper may be "easily accomplished" by rolling it up and employing the same fasteners used to attach the diaper to the wearer to form "a closed compact package for disposal."

In holding that the invention claim 76 covers was anticipated by Wilson, the Board did not hold that Wilson set forth a third fastening means. Instead, it found that Wilson anticipated claim 76 "under principles of inherency." Applying the language of claim 76 to the operation of Wilson, it concluded that "an artisan would readily understand the disposable absorbent garment of Wilson . . . as being inherently capable of [making the secondary load-bearing closure means] (third fastening element) mechanically engageable with [the other snap fasteners on the fastening strip] (first fastening element)" - i.e., using the secondary closure not with its mate, but with one of the primary snap fasteners. The Board summarily affirmed the examiner's alternative ruling that claim 76 would have been obvious in light of Wilson because "claim 76 lacks novelty."

II

Anticipation under 35 U.S.C. § 102(e) requires that "each and every element as set forth in the [*5] claim is found, either expressly or inherently described, in a

single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2D (BNA) 1051, 1053 (Fed. Cir. 1987).

A. The Wilson patent does not expressly include a third fastening means for disposal of the diaper, as claim 76 requires. That means is separate from and in addition to the other mechanical fastening means and performs a different function than they do. Indeed, Wilson merely suggests that the diaper may be closed for disposal by using the same fastening means that are used for initially attaching the diaper to the body.

B. If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2D (BNA) 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or [*6] possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.* at 1269, 20 U.S.P.Q.2D (BNA) at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981).

In finding anticipation by inherency, the Board ignored the foregoing critical principles. The Board made no attempt to show that the fastening mechanisms of Wilson that were used to attach the diaper to the wearer also "necessarily" disclosed the third separate fastening mechanism of claim 76 used to close the diaper for disposal, or that an artisan of ordinary skill would so recognize. It cited no extrinsic evidence so indicating.

Instead, the Board ruled that one of the fastening means for attaching the diaper to the wearer also could operate as a third fastening means to close the diaper for disposal and that Wilson therefore inherently contained all the elements of claim 76. In doing so, the Board failed to recognize that the third mechanical fastening means in claim 76, used to secure the diaper for disposal, was separate from and independent of the two other mechanical means used to attach the diaper to the person. The Board's theory that [*7] these two fastening devices in Wilson were capable of being intermingled to perform the same function as the third and first fastening elements in claim 76 is insufficient to show that the latter device was inherent in Wilson. Indeed, the Board's analysis rests upon the very kind of probability or possibility - the odd use of fasteners with other than their mates - that this court has pointed out is insufficient to establish inherency.

III

The Board's entire discussion of obviousness was as follows:

[*746] The rejection of claim 76 under 35 USC § 103

We sustain the rejection of claim 76 under 35 USC § 103.

Above, we found that claim 76 lacks novelty. Lack of novelty is the ultimate of obviousness. See *In re Fracalossi*, 681 F.2d 792, 794, 215 U.S.P.Q. (BNA) 569, 571 (CCPA 1982). Thus, claim 76 is appropriately rejected under 35 USC § 103 as being unpatentable.

The "lack of novelty" upon which the Board based its conclusion of obviousness, however, was its finding of anticipation. Our rejection of that finding eliminates the sole basis of the Board's obviousness determination, which therefore cannot stand. See *In re Adams*, 53 C.C.P.A. 1433, 364 F.2d 473, 480, 150 U.S.P.Q. 646, [**8] 651 (C.C.P.A. 1966).

In his brief the Commissioner argues:

Moreover, even if this court interprets claim 76 to require two separate fasteners to perform the closure and disposal functions, it would have been well within the knowledge of one of ordinary skill in the art to take Wilson's one fastener and make it into two separate fasteners. See [*In re*] *Graves*, 69 F.3d [1147.] 1152, 36 U.S.P.Q.2D (BNA) [1697.] 1701 [(Fed. Cir. 1995)]. (When evaluating a reference, it is appropriate to consider the knowledge of a skilled artisan in combination with the teaching of the reference.). Accordingly, claim 76 would have been obvious to one of ordinary skill in the art, and the rejection should be affirmed by this Court.

That, of course, was not the ground on which the Board based its obviousness ruling. We decline to consider counsel's newly-minted theory as an alternative ground for upholding the agency's decision. See *In re Soni*, 54 F.3d 746, 751, 34 U.S.P.Q.2D (BNA) 1684, 1688 (Fed. Cir. 1995) (citing *In re DeBlauwe*, 736 F.2d 699, 705 n.7, 222 U.S.P.Q. 191, 196 n.7 (Fed. Cir. 1984)). The Board's obviousness ruling cannot be sustained on the ground the Board gave. [**9]

CONCLUSION

The decision of the Board of Patent Appeals and Interferences affirming the examiner's rejection of claim 76 as anticipated by and obvious over the Wilson patent is

REVERSED.

CONCURBY: RADER

CONCUR: RADER, Circuit Judge, concurring.

Robertson asserts that the prior art Wilson patent does not teach three elements of claim 76: a "third mechanical fastening means," a disposal means on the "outside surface" of the body portion, and end regions that are "in an overlapping configuration when worn." In reversing the Board, this court relies solely on the purported failure of Wilson to teach the third fastening means. Because I believe Wilson teaches such a means, but does not teach the other two limitations at issue, I concur.

In its analysis, this court assumes without discussion that the claimed "third mechanical fastening means" covers a separate third mechanical fastening means. This issue is key, for if the claim does not require a separate third fastening means, but instead allows the first fastening means to also serve as the third, then the prior art Wilson patent clearly teaches that element of the claim. For two reasons, this claim does not, to my eyes, [**10] require a separate third fastening means. First, the claim does not specifically recite a separate third fastening means. Second, because the claim is in means-plus-function form, this court consults the specification to identify structure. The specification explicitly teaches that the first and third fastening elements can be the same so long as they are complementary, as they are in Wilson. Accordingly, I agree with the Board that Wilson teaches the claimed "third fastening element."

Wilson does not, however, teach either of the other two claim limitations at issue. As to the disposal means on the "outside surface" of the body portion, Wilson's figs. 12 and 13a-d show the disposal means on the inside of the body portion. As to the end regions that are "in an overlapping configuration when worn," Wilson explicitly teaches that the end regions should abut, not overlap, when worn. To overcome these teachings, the Board relied on the following statement in Wilson: "Further, the fastener members [*747] need not be previously mounted on a separate strip as shown then bonded . . . to the stretchable outer cover Multi-component snaps are available which may be applied directly to a [**11] stretchable outer cover material" Col. 7, l. 65 to col. 8, l. 3. The Board opined that applying snaps directly to the outer cover would result in both a disposal means on the "outside surface" and end regions "in an overlapping

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configuration when worn." Simply put, the Board has put more weight on this teaching than it can bear. It is far from clear what effect applying the snaps directly to the outer cover will have on the Wilson diaper configuration,

let alone that it will result in a configuration satisfying the claim elements at issue. Accordingly, because I believe that the Board clearly erred in this interpretation of Wilson, I would reverse on this ground.



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IN RE LONNIE T. SPADA and JOSEPH J. WILCZYNSKI

No. 90-1109

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

911 F.2d 705; 1990 U.S. App. LEXIS 13674; 15 U.S.P.Q.2D (BNA) 1655

August 10, 1990, Decided

PRIOR HISTORY: [1]**

Appealed from United States Patent and Trademark Office Board of Patent Appeals and Interferences.

DISPOSITION:

AFFIRMED.

LexisNexis (TM) HEADNOTES - Core Concepts:

COUNSEL:

James H. Laughlin, Jr., Benoit, Smith & Laughlin, of Arlington, Virginia, argued for Appellant. With him on the brief was Michael H. Laird, Unocal Corporation, Brea, California, of Counsel.

John H. Raubitschek, Associate Solicitor, Office of the Solicitor, of Arlington, Virginia, argued for Appellee. With him on the brief was Fred E. McKelvey, Solicitor.

JUDGES:

Newman and Mayer, Circuit Judges, and Garrett E. Brown, District Judge. *

* Judge Garrett E. Brown, Jr., United States District Court for the District of New Jersey, sitting by designation.

OPINIONBY:

NEWMAN

OPINION:

[*706] NEWMAN, Circuit Judge.

The decision of the United States Patent and Trademark Office (the PTO) Board of Patent Appeals and Interferences (the Board), rejecting claims 2 through 25 and 27 through 31, all the claims at issue of Spada and Wilczynski (hereinafter Spada) patent application Serial No. 859,057, filed May 2, 1986 and entitled "Pressure Sensitive Adhesives and Manufactured Articles", is affirmed.

The Invention

The Spada invention is a pressure sensitive [**2] adhesive composition comprising a water-based latex containing a normally tacky copolymer made from specified classes and proportions of monomers and having a glass transition temperature (T[g]) n1 of 0 degreesC or less. Claim 31 was treated by the parties as representative:

Claim 31. A pressure sensitive adhesive composition comprising a water-base latex comprising a continuous aqueous medium containing dispersed particles of a normally tacky polymer having a T[g] of about 0 degreesC. or less and comprising at least about 60 weight percent olefinically unsaturated carboxylic acid ester monomers and at least about 0.1 weight percent of at least one polymerizable functional monomer of the formula:

R[5] O

R[6] - CH = C - R[1] - C - CH[2] - X
in which R[1] is a divalent organic radical of at least 3 atoms in length, R[5] and

R[6] are independently selected from hydrogen, hydroxy, halo, thio, amino or monovalent organic radicals, and X is -CO-R[4] or -CN wherein R[4] is hydrogen or a monovalent organic radical.

n1 Glass transition temperature (T[g]) is defined as the temperature (or temperature range) at which an amorphous polymer changes from a hard, rigid, glassy state to a soft, flexible, rubbery state. S. Rosen, *Fundamental Principles of Polymeric Materials* § 8.1 (1982).

[**3]

The Spada disclosure broadly is coextensive with claim 31. While claim 31 requires that the polymers comprise members of two general classes of monomers, Spada's specific examples illustrate polymers in which members of three general classes of monomers are present.

The first class of monomer required by Spada is an olefinically unsaturated carboxylic acid ester that is present in at least about 60 weight percent of the polymer. Representative examples show 96.5 weight percent butyl acrylate (Example 2), and a combination of 48 weight percent butyl acrylate and 48 weight percent 2-ethylhexyl acrylate (Example 11).

Spada's second required class of monomer is a "polymerizable functional monomer" present in "at least about 0.1 weight percent" of the polymer (claim 31). The illustrative examples show 1-2 weight percent acetoacetoxyethyl methacrylate (AAEMA).

Spada's specification states that preferred polymer compositions include at least about 0.1 weight percent of a third [*707] class of monomer, an olefinically unsaturated carboxylic acid. Examples are 1.5 weight percent methacrylic acid (Example 2) and 3 weight percent acrylic acid (Example 7).

All of Spada's claims [**4] require that the T[g] of the claimed tacky polymers is about 0 degreesC or less, and that the products are pressure-sensitive adhesives.

The claims were rejected as unpatentable in view of the Smith reference, United States Patent No. 3,554,987, issued January 12, 1971. The Spada disclosure and the Smith reference both show polymers of the same monomers, in overlapping ratios of components. However, the products that Smith and Spada obtain are described as quite different.

The Smith Reference

Smith describes water-based latexes containing dispersed particles of polymers made from certain classes and proportions of monomers. The polymers are used in binding agents in photographic gels and films.

In most of Smith's examples three monomers are present, as in Spada's examples. The first monomer in Smith's preferred polymers is an olefinically unsaturated carboxylic acid ester, in at least 50 percent by weight of polymer. In Smith's examples this component is illustrated, inter alia, as 75.7 molar percent butyl acrylate (Example 5), and 72.4 weight percent ethyl acrylate (Example 15).

Smith's second monomer used in preparing his preferred polymers is a polymerizable functional [**5] monomer like that described by Spada, present in about 2-20 weight percent of the polymer. Smith's examples include polymers containing 9.4 molar percent of acetoacetoxyethyl acrylate (AAEA) (Example 5), and 3.5 weight percent AAEMA (Example 15). Spada incorporated by reference the entire disclosure of the Smith patent, as showing polymerizable functional monomers suitable and preferred for use in the Spada polymers, and the preparation of these monomers.

The preferred polymers of Smith contain a third monomer, as do Spada's, and most of Smith's examples include acrylic acid. Thus, in Smith's Example 5 the complete polymer composition is 75.7 molar percent butyl acrylate, 9.4 molar percent AAEA, and 14.9 molar percent acrylic acid. In Smith's Example 15 the composition is 72.4 weight percent ethyl acrylate, 3.5 weight percent AAEMA, and 24.1 weight percent acrylic acid.

Smith states that emulsions containing his polymers have improved properties of hardness, resistance to abrasion, good adhesion, and dimensional stability. Smith does not show or suggest that his polymer latexes can form a normally tacky pressure-sensitive adhesive -- properties admitted to be different from hardness [**6] and abrasion resistance.

Discussion

The Board affirmed the rejection of Spada's claims under 35 U.S.C. § § 102, 103, this hybrid rejection having apparently been made on the theory that if the claimed subject matter was novel, i.e. not anticipated, in terms of section 102, then it would have been obvious under section 103. n2 The Commissioner on this appeal concentrates on the rejection for anticipation. The Commissioner argues that a *prima facie* case n3 of anticipation is made by the Smith disclosure of polymers that are apparently identical [*708] to those of Spada, although the properties described by Smith are different

from those that are reported by Spada and included as express limitations in Spada's claims.

n2 The court has accepted the PTO's practice of basing rejections on sections 102 or 103 in the alternative, provided that the appellant was fully apprised of all the grounds of rejection. *See, e.g., In re Pearson*, 494 F.2d 1399, 1402 & nn. 2-3, 181 USPQ 641, 644 & nn. 2-3 (CCPA 1974).
[**7]

n3 The *prima facie* case is a procedural tool which, as used in patent examination (as by courts in general), means not only that the evidence of the prior art would reasonably allow the conclusion the examiner seeks, but also that the prior art compels such a conclusion if the applicant produces no evidence or argument to rebut it. *See Black's Law Dictionary* 1071 (5th Ed. 1979). *See generally In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) (citing cases showing the evolution of the concept in patent examination of *prima facie* obviousness as a legal inference drawn from uncontradicted evidence). Upon rebuttal, the decision is made on the entirety of the record. *Id.*

-----End Footnotes-----

Rejection for anticipation or lack of novelty requires, as the first step in the inquiry, that all the elements of the claimed invention be described in a single reference. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 [**8] (Fed. Cir.), *cert. denied*, 493 U.S. 853, 110 S. Ct. 154, 107 L. Ed. 2d 112 (1989). Further, the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. *Akzo N.V. v. United States Int'l Trade Comm'n*, 808 F.2d 1471, 1479, 1 USPQ2d 1241, 1245 (Fed. Cir. 1986), *cert. denied*, 482 U.S. 909, 96 L. Ed. 2d 382, 107 S. Ct. 2490 (1987); *In re Coker*, 59 C.C.P.A. 1185, 463 F.2d 1344, 1348, 175 USPQ 26, 29 (CCPA 1972).

Spada argues that Smith does not describe Spada's claimed invention, for to find anticipation "all limitations in the claims must be found in the reference since the claims measure the invention." *In re Lange*, 644 F.2d 856, 862, 209 USPQ 288, 293 (CCPA 1981). Spada states that since his compositions are claimed as pressure-sensitive adhesives containing a tacky polymer

having a T[g] below 0 degreesC, they can not be anticipated. Spada argues that since the Smith products are hard, abrasion-resistant solids, they are *ipso facto* different.

[**9] The discovery of a new property or use of a previously known composition, even when that property and use are unobvious from the prior art, can not impart patentability to claims to the known composition. n4 *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 782, 227 USPQ 773, 777-78, 778 (Fed. Cir. 1985); *In re Pearson*, 494 F.2d 1399, 1403, 181 USPQ 641, 644 (CCPA 1974); *In re Lemin*, 51 C.C.P.A. 942, 326 F.2d 437, 440, 140 USPQ 273, 276 (CCPA 1964). Thus, the initial inquiry is to the novelty of the composition. *Titanium Metals*, 778 F.2d at 780, 227 USPQ at 777.

n4 All of Spada's claims are composition claims. The issue is not before us of whether Spada may have discovered a new use of a known composition, which use may be patentable as a process. 35 U.S.C. § 101. *See In re Hack*, 44 C.C.P.A. 954, 245 F.2d 246, 248, 114 USPQ 161, 163 (1957).

[**10]

The Board held that the compositions claimed by Spada "appear to be identical" to those described by Smith. While Spada criticizes the usage of the word "appear", we think that it was reasonable for the PTO to infer that the polymerization by both Smith and Spada of identical monomers, employing the same or similar polymerization techniques, would produce polymers having the identical composition. Products of identical chemical composition can not have mutually exclusive properties. *See In re Papesch*, 50 C.C.P.A. 1084, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963) (a chemical compound and its properties are inseparable).

While the art and science of polymer chemistry may be distinguished from that of simpler compounds and compositions, in Spada's case we conclude that the Board correctly found that the virtual identity of monomers and procedures sufficed to support a *prima facie* case of unpatentability of Spada's polymer latexes for lack of novelty. *See, e.g., In re Thorpe*, 777 F.2d 695, 697-98, 227 USPQ 964, 966 (Fed. Cir. 1985), wherein the examiner's [**11] rejection of product-by-process claims under §§ 102, 103, based on similarity of reactants, reaction conditions, and properties, amounted to a *prima facie* case of unpatentability.

In response to the PTO's asserted *prima facie* case the applicant may argue that the inference of lack of novelty was not properly drawn, for example if the PTO

911 F.2d 705, *, 1990 U.S. App. LEXIS 13674, **;
15 U.S.P.Q.2D (BNA) 1655

did not correctly apply or understand the subject matter of the reference, or if the PTO drew unwarranted conclusions therefrom. However, when the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not. *In re King*, 801 F.2d 1324, 1327, 231 USPQ 136, 138 (Fed. Cir. 1986); *In re Ludtke*, 58 C.C.P.A. 1159, 441 F.2d 660, 664, 169 USPQ 563, 566 (CCPA 1971). Spada offered no such showing.

[*709] The Board suggested that Spada provide some scientific explanation for the asserted differences between the properties of his compositions and those described by Smith. While [**12] an inventor is not required to understand how or why an invention works, we think that the PTO was correct, in view of the apparent identity of the compositions, in requiring Spada to distinguish n5 his compositions from those of Smith. Although newly discovered properties can be the basis of claims to novel polymers, *E.I. Du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1435, 7 USPQ2d 1129, 1133 (Fed. Cir.), cert. denied, 488 U.S. 986, 109 S. Ct. 542, 102 L. Ed. 2d 572 (1988), Spada did not overcome, with argument or evidence, the apparent chemical identity of his polymers and those of Smith. Spada showed no error, in science or in law, in the Board's holding that the products appeared to be the same and thus that Spada's products were not new.

n5 It was discussed at oral argument that the Spada invention may not be "particularly point[ed] out and distinctly claim[ed]", in the words of 35 U.S.C. § 112, paragraph 2. No rejection had been made under section 112. The Solicitor stated that such a rejection was inappropriate because the claims were "not vague". *But see Burlington Indus. v. Quigg*, 822

F.2d 1581, 1583-84, 3 USPQ2d 1436, 1438 (Fed. Cir. 1987) (whether claims were too broadly written is not a section 103 determination but an issue of claim imprecision under section 112). *See also In re Muchmore*, 58 C.C.P.A. 719, 433 F.2d 824, 824-25, 167 USPQ 681, 682 (CCPA 1970) ("there is sometimes a close relationship between indefiniteness under § 112, second paragraph, and obviousness under § 103").

[**13]

Spada pointed to his data wherein polymers containing varying amounts of AAEMA showed greatly increased shear strength without significant loss in tack, compared with polymers without the AAEMA. We agree with Spada that this result is not suggested in the Smith reference. However, these data did not relate to the fundamental question of the novelty of Spada's compositions in view of those of Smith. Without novelty, evidence of unobviousness is superfluous.

As we observed *supra*, discovery of an unobvious property and use does not overcome the statutory restraint of section 102 when the claimed composition is known. While Spada's position is that his polymers are not anticipated by the polymers of Smith because their properties are different, Spada was reasonably required to show that his polymer compositions are different from those described by Smith. This burden was not met by simply including the assertedly different properties in the claims. [**14] When the claimed compositions are not novel they are not rendered patentable by recitation of properties, whether or not these properties are shown or suggested in the prior art.

The Board's decision rejecting all of the claims is

AFFIRMED



LEXSEE 301 F.3D 1343

IN RE CRUCIFEROUS SPROUT LITIGATION; BRASSICA PROTECTION PRODUCTS LLC and JOHNS HOPKINS UNIVERSITY, Plaintiffs-Appellants, v. SUNRISE FARMS, BECKY CRIKELAIR, and FRANK CRIKELAIR, Defendants-Appellees, and EDRICH FARMS INC., EDWARD B. STANFIELD, III, EDWARD F. STANFIELD, JR., RICHARD STANFIELD, and SALLY F. STANFIELD, Defendants-Appellees, and BANNER MOUNTAIN SPROUTS, BANNER MOUNTAIN SPROUTS INC., and LAWRENCE RAVITZ, Defendants-Appellees, and HARMONY FARMS, GREG LYNN, and LORNA LYNN, and INTERNATIONAL SPECIALTY SUPPLY and ROBERT L. RUST, Defendants-Appellees.

02-1031

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

301 F.3d 1343; 2002 U.S. App. LEXIS 17185; 64 U.S.P.Q.2D (BNA) 1202

August 21, 2002, Decided

SUBSEQUENT HISTORY: **[**1]** Rehearing denied by, Rehearing, en banc, denied by *In re Cruciferous Sprout Litig. v. Sunrise Farms*, 2002 U.S. App. LEXIS 22195 (Fed. Cir., Sept. 30, 2002) US Supreme Court certiorari denied by *Brassica Prot. Prod., LLC v. Sunrise Farms*, 2003 U.S. LEXIS 2004 (U.S., Mar. 10, 2003)

PRIOR HISTORY: Appealed from: United States District Court for the District of Maryland. Judge William M. Nickerson. *In re Cruciferous Sprout Patent Litig.*, 168 F. Supp. 2d 534, 2001 U.S. Dist. LEXIS 17271 (D. Md., 2001)

DISPOSITION: Affirmed.

LexisNexis (TM) HEADNOTES - Core Concepts:

COUNSEL: E. Anthony Figg, Rothwell, Figg, Ernst & Manbeck, P.C., of Washington, DC, argued for plaintiffs-appellants. With him on the brief were Joseph A. Hynds and Mark I. Bowditch.

Joseph A. Kromholz, Ryan, Kromholz & Manion, of Milwaukee, Wisconsin, argued for defendants-appellees. With him on the brief for defendants-appellees Sunrise Farms, et al. was Daniel R. Johnson. On the brief for defendants-appellees Harmony Farms, et al. was Delbert

J. Barnard, Barnard & Pauly, P.S. On the brief for defendants-appellees Edrich Farms Inc., et al. was Philip M. Andrews, Kramon & Graham, P.A., of Baltimore, Maryland. On the brief for defendants-appellees Banner Mountain Sprouts, et al. was Donald W. Ullrich, Jr., The Ullrich Law Firm, of Sacramento, California.

JUDGES: Before CLEVINGER, BRYSON, and PROST, Circuit Judges.

OPINIONBY: PROST

OPINION: **[*1345]** PROST, Circuit Judge.

Brassica Protection Products LLC and Johns Hopkins University (collectively "Brassica") appeal from the decision of the United States District Court for the District of Maryland granting summary judgment that U.S. Patent **[**2]** Nos. 5,725,895 ("the '895 patent"), 5,968,567 ("the '567 patent"), and 5,968,505 ("the '505 patent") are invalid as anticipated by the prior art. *In re Cruciferous Sprout Patent Litig.*, 168 F. Supp. 2d 534, 60 U.S.P.Q.2D (BNA) 1758 (D. Md. 2001). We affirm the district court's ruling.

BACKGROUND

The three patents-in-suit relate to growing and eating sprouts to reduce the level of carcinogens in animals, thereby reducing the risk of developing cancer.

Specifically, the patents describe methods of preparing food products that contain high levels of substances that induce Phase 2 enzymes. These enzymes are part of the human body's mechanism for detoxifying potential carcinogens. Thus, they have a chemoprotective effect against cancer. '895 patent, col. 1, ll. 28-34. Foods that are rich in glucosinolates, such as certain cruciferous sprouts, have high Phase 2 enzyme-inducing potential. The inventors of the patents-in-suit recognized that the Phase 2 enzyme-inducing agents (or their glucosinolate precursors) are far more concentrated in certain sprouts (such as broccoli and cauliflower but not cabbage, cress, mustard or radish) that are harvested before the two-leaf stage than [**3] in corresponding adult plants. *Id.* at col. 7, l. 63 - col. 8, l. 14. However, glucosinolate levels in cruciferous plants can be highly variable. See *id.* at col. 12, ll. 66-67 ("There is variation in inducer potential among different broccoli cultivars."). According to the inventors, it is therefore desirable to select the seeds of those cruciferous plants which, when germinated and harvested before the two-leaf stage, produce sprouts that contain high levels of the desired enzyme-inducing potential.

The '895 patent was filed on September 15, 1995, and claims, *inter alia*, "A method of preparing a food product rich in glucosinolates, comprising germinated cruciferous seeds, with the exception of cabbage, cress, mustard and radish seeds, and harvesting sprouts prior to the 2-leaf stage, to form a food product comprising a plurality of sprouts." '895 patent, claim 1. The '567 patent is a continuation of the '895 application and it claims a "method of preparing a human food product" from sprouts. '567 patent, claims 1 and 9. The '505 patent is a divisional of the '895 application and it claims a "method of increasing the chemoprotective amount of Phase 2 enzymes in a mammal, [**4] " as well as a "method of reducing the level of carcinogens in a mammal," by creating a "food product" from sprouts and then "administering said food product" to a mammal. '505 patent, claims 1 and 16.

The three patents-in-suit are owned by Johns Hopkins University and exclusively licensed to Brassica Protection Products LLC. Johns Hopkins and Brassica sued Sunrise Farms, Becky Crikelair, Frank Crikelair, Edrich Farms, Inc., Edward B. Stanfield, III, Edward F. Stanfield, Jr., Richard Stanfield, Sally F. Stanfield, Banner Mountain Sprouts, Banner Mountain Sprouts, Inc., Lawrence Ravitz, Harmony [*1346] Farms, International Specialty Supply, Greg Lynn, Lorna Lynn and Robert L. Rust (collectively "defendants") in various district courts. Pursuant to 28 U.S.C. § 1407, the Judicial Panel on Multidistrict Litigation consolidated the various cases in the District of Maryland for pretrial proceedings. On June 7, 2001, the defendants filed a joint motion for

partial summary judgment of invalidity, arguing that the patents were anticipated by prior art references disclosing growing and eating sprouts. Brassica filed a cross-motion for summary judgment that the patents are not [**5] invalid. On July 23, 2001, the district court held a Markman hearing to address claim construction issues and the parties' motions for summary judgment.

On August 10, 2001, the court granted defendants' motion for summary judgment of invalidity and denied Brassica's cross-motion for summary judgment. According to the district court, "the record before the Court makes it abundantly clear that, prior to the issuance of the patents-in-suit, one skilled in the art could, by following the teachings of the prior art, germinate broccoli seeds, harvest the sprouts, and sell them as a food product." *In re Cruciferous Sprout Patent Litig.*, 168 F. Supp. 2d at 540, 60 U.S.P.Q.2D (BNA) at 1762. While recognizing that the inventors of the patents-in-suit may have discovered a new and significant property of certain types of cruciferous sprouts, the district court concluded that "merely describing unexpected beneficial results of a known process does not entitle Plaintiffs to patent that process." *Id.* at 538, 60 U.S.P.Q.2D (BNA) at 1760. Thus, a "plant (broccoli sprouts), long well known in nature and cultivated and eaten by humans for decades, [cannot] be patented merely on [**6] the basis of a recent realization that the plant has always had some heretofore unknown but naturally occurring beneficial feature." *Id.* at 537, 60 U.S.P.Q.2D (BNA) at 1759. On October 1, 2001, the court entered a Judgment Under Rule 54(b) in favor of defendants but limited its invalidity ruling to claims 1-6 and 9 of the '895 patent, claims 1-8 of the '567 patent, and claims 1 and 16 of the '505 patent. *In re Cruciferous Sprout Patent Litig.*, MDL Docket No. 1388 (D. Md. Oct. 1, 2001) (Rule 54(b) Determination). Brassica appeals the judgment of invalidity, arguing that the district court failed to properly construe the claims and did not apply the properly construed claims to the prior art when determining that the claims are anticipated under 35 U.S.C. § 102(b). We have jurisdiction under 28 U.S.C. § 1295 (a)(1).

DISCUSSION

This court reviews a grant of summary judgment *de novo*, drawing all reasonable factual inferences in favor of the non-moving party. See, e.g., *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255, 91 L. Ed. 2d 202, 106 S. Ct. 2505 (1986). Summary judgment is appropriate when there [**7] is no genuine issue of material fact and the moving party is entitled to judgment as a matter of law. *Id.* at 247-48. Anticipation is a question of fact, *Gen. Elec. Co. v. Nintendo Co.*, 179 F.3d 1350, 1353, 50 U.S.P.Q.2D (BNA) 1910, 1912 (Fed. Cir. 1999), and is determined by first construing the claims and then

comparing the properly construed claims to the prior art, *Gechter v. Davidson*, 116 F.3d 1454, 1457, 43 U.S.P.Q.2D (BNA) 1030, 1032 (Fed. Cir. 1997). Claim construction is an issue of law that we review de novo. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1456, 46 U.S.P.Q.2D (BNA) 1169, 1174 (Fed. Cir. 1998) (en banc). We also determine de novo whether the evidence in the record raises any genuine disputes about material facts. *Gen. Elec.*, 179 F.3d at 1353, 50 U.S.P.Q.2D (BNA) at 1912.

[*1347] I.

Brassica contends that the district court erroneously construed the claims by failing to treat the preamble of claim 1 of the '895 patent as a limitation of the claims. In addition, Brassica argues that the district court failed to construe the limitations "rich in glucosinolates" (appearing in claims 1 and 9 of the '895 patent) and [**8] "high Phase 2 enzyme-inducing potential" (appearing in claim 1 of the '567 patent and claims 1 and 16 of the '505 patent).

No litmus test defines when a preamble limits claim scope. *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 U.S.P.Q.2D (BNA) 1962, 1966 (Fed. Cir. 1989). Whether to treat a preamble as a limitation is a determination "resolved only on review of the entirety of the patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim." *Id.*; *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808, 62 U.S.P.Q.2D (BNA) 1781, 1785 (Fed. Cir. 2002). In general, a preamble limits the claimed invention if it recites essential structure or steps, or if it is "necessary to give life, meaning, and vitality" to the claim. *Catalina Mktg.*, 289 F.3d at 808, 62 U.S.P.Q.2D (BNA) at 1784 (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 U.S.P.Q.2D (BNA) 1161, 1165 (Fed. Cir. 1999)). Clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art may indicate that the preamble is a claim limitation because [**9] the preamble is used to define the claimed invention. *Catalina Mktg.*, 289 F.3d at 808, 62 U.S.P.Q.2D (BNA) at 1785; *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1375, 58 U.S.P.Q.2D (BNA) 1508, 1513 (Fed. Cir. 2001).

In this case, both the specification and prosecution history indicate that the phrase "rich in glucosinolates" helps to define the claimed invention and is, therefore, a limitation of claim 1 of the '895 patent. The specification, for example, states that "this invention relates to the production and consumption of foods which are rich in cancer chemoprotective compounds." '895 patent, col. 1, ll. 18-19. A stated object of the invention is "to provide food products and food additives

that are rich in cancer chemoprotective compounds." *Id.* at col. 2, ll. 38-39. The specification therefore indicates that the inventors believed their invention to be making food products that are rich in chemoprotective compounds, or, in other words, food products "rich in glucosinolates."

n1 In addition, during reexamination n2 of the '895 patent the patentee argued as follows:

Claim 1 of the patent, for example, is directed to "[a] method [**10] of preparing a [*1348] food product rich in glucosinolates, . . . and harvesting sprouts prior to the 2-leaf stage, to form a food product comprising a plurality of sprouts." . . . Although "rich in glucosinolates" is recited in the preamble of the claim, the pertinent case law holds that the preamble is given weight if it breathes life and meaning into the claim. . . . Accordingly, the cited prior art does not anticipate the claims because it does not explicitly teach a method of preparing a food product comprising cruciferous sprouts that are rich in glucosinolates or contain high levels of Phase 2 inducer activity.

This language shows a clear reliance by the patentee on the preamble to persuade the Patent Office that the claimed invention is not anticipated by the prior art. As such, the preamble is a limitation of the claims. See *Bristol-Myers Squibb*, 246 F.3d at 1375, 58 U.S.P.Q.2D (BNA) at 1513.

n1 Phase 2 enzymes are part of the human body's mechanism for detoxifying potential carcinogens. These enzymes therefore have a chemoprotective effect against cancer. According to the '895 patent, "most of the [Phase 2 enzyme] inducer potential of crucifer plants is due to their content of isothiocyanates and their biogenic precursors, glucosinolates." '895 patent, col. 8, ll. 14-16. [**11]

n2 On December 6, 1999, the Patent Office granted a request for reexamination of the '895 patent. Claims 1-6 and 9-13 were rejected as anticipated by or obvious in light of many of the same prior art references relied on by the defendants in this case. After considering the patentee's arguments and declarations in support

of patentability, the Patent Office issued a reexamination certificate and gave the following examiner's statement of reasons for patentability: "a method of preparing a food product wherein cruciferous sprouts, with the exception of cabbage, cress, mustard, and radish sprouts, that are rich in glucosinolates or contain high levels of phase 2 inducer activity are harvested prior to the 2-leaf stage is not taught or fairly suggested by the prior art or any combination thereof."

Brassica also asks this court to construe the phrases "rich in glucosinolates" and "high Phase 2 enzyme-inducing potential" to require "at least 200,000 units per gram fresh weight of Phase 2 enzyme-inducing potential at 3-days following incubation under conditions in which cruciferous seeds germinate [**12] and grow." '895 patent, col. 7, ll. 47-53.

"The words of a claim are generally given their ordinary and accustomed meaning, unless it appears from the specification or the file history that they were used differently by the inventor." *Carroll Touch, Inc. v. Electro Mech. Sys., Inc.*, 15 F.3d 1573, 1577, 27 U.S.P.Q.2D (BNA) 1836, 1840 (Fed. Cir. 1993). However, "limitations appearing in the specification will not be read into claims, and . . . interpreting what is meant by a word in a claim 'is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.'" *Intervet Am., Inc. v. Kee-Vet Labs., Inc.*, 887 F.2d 1050, 1053, 12 U.S.P.Q.2D (BNA) 1474, 1476 (Fed. Cir. 1989). Brassica's proposed construction violates this rule by improperly importing limitations from the specification into the claims. True, the specification states that "suitable sprouts will have at least 200,000 units per gram of fresh weight of Phase 2 enzyme-inducing potential following 3-days incubation of seeds under conditions in which the seeds germinate and grow." '895 patent, col. 10, l. 66 - col. 11, l. 2. The specification does not, however, indicate [**13] that the phrases "rich in glucosinolates" or "high in Phase 2 enzyme-inducing potential" are limited to these precise conditions. Rather, the specification uses the term "high" in its ordinary, comparative sense to mean "not low". For example, the specification states that "the cruciferous sprouts of the instant invention have higher Phase 2 enzyme-inducer potential than market stage plants," *id.* at col. 14, ll. 5-7, and the "Phase 2 enzyme-inducing potential of such sprouts may be as much as several hundred times higher than that observed in adult, market stage vegetables obtained from the same seeds," *id.* at col. 8, ll. 6-9; see also *Innovad Inc. v. Microsoft Corp.*, 260 F.3d 1326, 1332, 59 U.S.P.Q.2D (BNA) 1676, 1680 (Fed. Cir. 2001) (construing the term "small volume" based in part on the

specification's use of the phrase in its general sense to mean "not large"). Likewise, the term "rich" is not specifically defined or limited by the specification, but instead is used in its ordinary, relative sense. See, e.g., *id.* at col. 11, ll. 15-17 ("Mature Brussels sprouts and rapeseed are rich in these undesirable glucosinolates."); col. 11, ll. 37-39 ("Seeds, as well [**14] as sprouts have been found to be extremely rich in inducer potential.").

Brassica's proposed construction is also inconsistent with the language of the dependent claims. Claim 19 of the '567 patent recites: "The method according to [*1349] claim 1, wherein said seeds produce cruciferous sprouts containing at least 200,000 units per gram fresh weight of Phase 2 enzyme-inducing potential measured after 3-days of growth." '567 patent, col. 22, ll. 62-65. Brassica's proposed construction would render this claim meaningless. See *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187, 48 U.S.P.Q.2D (BNA) 1001, 1005-06 (Fed. Cir. 1998) (finding a violation of the doctrine of claim differentiation when a proposed construction would render another claim superfluous). We therefore reject Brassica's proposed claim construction for the phrases "rich in glucosinolates" and "high in Phase 2 enzyme-inducing potential."

II.

Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims. In order to prove that a claim is anticipated under 35 U.S.C. § 102(b), defendants must present [**15] clear and convincing evidence that a single prior art reference discloses, either expressly or inherently, each limitation of the claim. *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565, 24 U.S.P.Q.2D (BNA) 1321, 1326 (Fed. Cir. 1992).

Brassica argues that the prior art does not expressly or inherently disclose the claim limitations of "preparing a food product rich in glucosinolates" (claims 1 and 9 of the '895 patent), or "identifying seeds which produce cruciferous sprouts . . . containing high Phase 2 enzyme-inducing potential" (claims 1 and 16 of the '505 patent, claim 1 of the '567 patent). According to Brassica, the prior art merely discusses growing and eating sprouts without mention of any glucosinolates or Phase 2 enzyme-inducing potential, and without specifying that particular sprouts having these beneficial characteristics should be assembled into a "food product." n3 Moreover, Brassica argues, the prior art does not inherently disclose these limitations because "at most, one following the prior art would have a possibility or probability of producing a food product high in Phase 2 enzyme-inducing potential" and the "fact that [**16] one

following the prior art might have selected seeds meeting the limitations of the claims is not sufficient to establish inherent anticipation."

n3 "A food product is any ingestible preparation containing the sprouts of the instant invention, or extracts or preparations made from these sprouts" '895 patent, col. 6, ll. 26-28.

It is well settled that a prior art reference may anticipate when the claim limitations not expressly found in that reference are nonetheless inherent in it. See, e.g., *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 51 U.S.P.Q.2D (BNA) 1943 (Fed. Cir. 1999); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). "Under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates." *MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365, 52 U.S.P.Q.2D (BNA) 1303, 1305 (Fed. Cir. 1999) (finding anticipation of a method of hair depilation by [**17] an article teaching a method of skin treatment but recognizing the disruption of hair follicles, citing *In re King*, 801 F.2d 1324, 1326, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986)). "Inherency is not necessarily coterminous with the knowledge of those of ordinary skill in the art. Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art." *MEHL/Biophile*, 192 F.3d at 1365, 52 U.S.P.Q.2D (BNA) at 1305-06; [**1350] *Atlas Powder*, 190 F.3d at 1347, 51 U.S.P.Q.2D (BNA) at 1946-47.

Brassica does not claim to have invented a new kind of sprout, or a new way of growing or harvesting sprouts. Rather, Brassica recognized that some sprouts are rich in glucosinolates and high in Phase 2 enzyme-inducing activity while other sprouts are not. See '895 patent, col. 10, ll. 28-42 ("Sprouts suitable as sources of cancer chemoprotectants are generally cruciferous sprouts, with the exception of cabbage (*Brassica oleracea capitata*), cress (*Lepidiumsativum*), mustard (*Sinapis alba* and *S. niger*) and radish (*Raphanus sativus*) sprouts."). But the glucosinolate content and Phase 2 enzyme-inducing potential of sprouts necessarily have existed [**18] as long as sprouts themselves, which is certainly more than one year before the date of application at issue here. See, e.g., Karen Cross Whyte, *The Complete Sprouting Cookbook* 4 (1973) (noting that in "2939 B.C., the Emperor of China recorded the use of health giving sprouts"). Stated differently, a sprout's glucosinolate content and Phase 2 enzyme-inducing potential are inherent characteristics of the sprout. Cf. Brian R. Clement, *Hippocrates Health Program* 8 (1989) (referring to "inherent enzyme inhibitors, phytates

(natural insecticides), oxalates, etc., present in every seed"). It matters not that those of ordinary skill heretofore may not have recognized these inherent characteristics of the sprouts. *MEHL/Biophile*, 192 F.3d at 1365, 52 U.S.P.Q.2D (BNA) at 1305.

Titanium Metals Corp. v. Banner is particularly instructive in this regard. In that case, the claim at issue recited:

A titanium base alloy consisting essentially by weight of about 0.6% to 0.9% nickel, 0.2% to 0.4% molybdenum, up to 0.2% maximum iron, balance titanium, said alloy being characterized by good corrosion resistance in hot brine environments.

Titanium Metals, 778 F.2d at 776, 227 U.S.P.Q. at 774. [**19] The prior art disclosed a titanium base alloy having the recited components of the claim, but the prior art did not disclose that such an alloy was "characterized by good corrosion resistance in hot brine environments." We nevertheless held that the claim was anticipated by the prior art, because "it is immaterial, on the issue of their novelty, what inherent properties the alloys have or whether these applicants discovered certain inherent properties." *Id.* at 782, 227 U.S.P.Q. at 779. *Titanium Metals* explained the rationale behind this common sense conclusion:

The basic provision of Title 35 applicable here is § 101, providing in relevant part: "Whoever invents or discovers any new . . . composition of matter, or any new . . . improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

. . . .

. . . Counsel never came to grips with the real issues: (1) what do the claims cover and (2) is what they cover new? Under the laws Congress wrote, they must be considered. Congress has not seen fit to permit the patenting of an old alloy, known to others through a printed publication, by one who has discovered [**20] its corrosion resistance or other useful properties, or has found out to what extent one can modify the composition of the alloy without losing such properties.

Id. at 780, 782, 227 U.S.P.Q. at 777-78. Brassica has done nothing more than recognize properties inherent in certain prior art sprouts, just like the corrosion resistance

properties inherent to the [*1351] prior art alloy in Titanium Metals. n4 While Brassica may have recognized something quite interesting about those sprouts, it simply has not invented anything new.

n4 Most of the claims at issue are method claims, not composition or product claims. Nevertheless, the principles of Titanium Metals still apply. See, e.g., *MEHL/Biophile*, 192 F.3d at 1366-67, 52 U.S.P.Q.2D (BNA) at 1306 (finding anticipation by inherency of a method of hair depilation); *Bristol-Myers*, 246 F.3d at 1376, 58 U.S.P.Q.2D (BNA) at 1514 (Fed. Cir. 2001) (stating that "newly discovered results of known processes directed to the same purpose are not patentable because such results are inherent").

[**21]

Brassica nevertheless argues that its claims are not anticipated because the prior art does not disclose selecting the particular seeds that will germinate as sprouts rich in glucosinolates and high in Phase 2 enzyme-inducing potential (as opposed to selecting other kinds of seeds to sprout) in order to form a food product. We disagree. The prior art teaches sprouting and harvesting the very same seeds that the patents recognize as producing sprouts rich in glucosinolates and having high Phase 2 enzyme-inducing potential. According to the patents, examples of suitable sprouts are

typically from the family Cruciferea, of the tribe Brassiceae, and of the subtribe Brassicinae. Preferably the sprouts are Brassica oleracea selected from the group of varieties consisting of acephala (kale), collards, wild cabbage, curly kale), medullosa (marrowstem kale), ramosa (thousand head kale), alboglabra (Chinese kale), botrytis (cauliflower, sprouting broccoli), costata (Portugese kale), gemmifera (Brussels sprouts), gongylodes (kohlrabi), italica (broccoli), palmifolia (Jersey kale), sabauda (savoy cabbage), sabellica (collards), and selensia (borecole), among others.

'895 patent, [**22] col. 10, ll. 32-42. Numerous prior art references identify these same sprouts as suitable for eating. See, e.g., Stephen Facciola, *Cornucopia: A Source Book of Edible Plants* 47 (1990) (listing "Brassica oleracea Botrytis Group - Cauliflower . . . Sprouted seeds are eaten"), Esther Munroe, *Sprouts to Grow and Eat* 9-14 (1974) (identifying "Broccoli,

Brussels sprouts, Cabbage, Cauliflower, Collards and Kale"). These references therefore meet the claim limitation of identifying seeds to use in order to have sprouts with the inherent properties of glucosinolates and high Phase 2 enzyme-inducing activity. Despite the patents' admissions about the suitability of particular plant species found in these prior art references, Brassica argues that only specific cultivars of these plant species are rich in glucosinolates and high in Phase 2 enzyme-inducing activity. Thus, according to Brassica, the prior art fails to meet the "identifying" steps of the claims because it does not specify which cultivars should be sprouted. However, all of the appropriate cultivars that are identified in Brassica's patent are in the public domain. '895 patent, col. 10, ll. 43-65. Brassica cannot credibly [**23] maintain that no one has heretofore grown and eaten one of the many suitable cultivars identified by its patents. It is unnecessary for purposes of anticipation for the persons sprouting these particular cultivars to have realized that they were sprouting something rich in glucosinolates and high in Phase 2 enzyme-inducing potential. *Atlas Powder*, 190 F.3d at 1348, 51 U.S.P.Q.2D (BNA) at 1947 ("The public remains free to make, use, or sell prior art compositions or processes, regardless of whether or not they understand their complete makeup of the underlying scientific principles which allow them to operate.").

The prior art also discloses the remaining limitations of the claims. The Munroe [*1352] reference, for example, recommends that sprouts be harvested between "3 to 5 days for a sprouted length of 1/2 to 1 inch." Munroe at 9. Photographs of these sprouts show that they have not yet reached the two-leaf stage of development. Id. at 10-13. Thus, this reference discloses the claim limitations of germinating the appropriate cruciferous seeds and harvesting the resulting sprouts prior to the 2-leaf stage. See '895 patent, claims 1 and 9; '567 patent, claims 1 and 2; '505 [**24] patent, claims 1 and 16. Munroe also discloses that these particular sprouts can be used in food products such as "soups, salads and main dishes," id. at p. 14, thereby meeting the claim limitation of forming a food product comprising a plurality of the sprouts ('895 patent claims 1 and 9; '567 patent, claims 1 and 8; '505 patent, claims 1 and 16) and the claim limitation of administering (eating) the food product ('505 patent, claims 1 and 16). The Munroe reference therefore discloses each and every limitation of these claims of the patents. See also, Meyerowitz, *Growing Vegetables Indoors* (1990).

In summary, the prior art inherently contains the claim limitations that Brassica relies upon to distinguish its claims from the prior art. While Brassica may have recognized something about sprouts that was not known before, Brassica's claims do not describe a new method.

CONCLUSION

For the foregoing reasons, we affirm the district court's summary judgment that the claims at issue are anticipated by the prior art. The prior art indisputably includes growing, harvesting and eating particular sprouts which Brassica has recognized as being rich in glucosinolates and high in **[**25]** Phase 2 enzyme-

inducing potential. But the glucosinolate content and Phase 2 enzyme-inducing potential of these sprouts are inherent properties of the sprouts put there by nature, not by Brassica. Brassica simply has not claimed anything that is new and its claims are therefore invalid.

AFFIRMED